HISTORY

Model Name : SDM-HS95P
SERVICE MANUAL
Part No. : 9-878-334-01

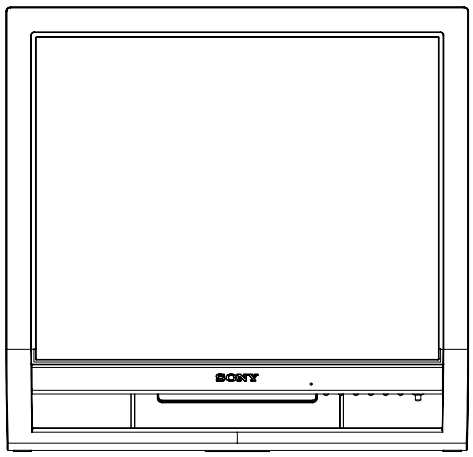
When clicking an item, it's detail is displayed.

Date	SUPP./CORR.	Description of SUP/COR	Change of main text
2005.04		NEW	–

SDM-HS95P

SERVICE MANUAL

US Model
Canadian Model
AEP Model
Chinese Model



TFT LCD COLOR COMPUTER DISPLAY

SONY®

There are some different LCD panels are used in the model SDM-HS95P.
Therefore the repair parts are also different .
Please confirm the serial number before repairing.

No.	Model name	Colour	Destination	Serial Range	Panel	Plant
	SDM-HS95P	SILVER	UC	6,300,001-6,450,000	LPL	LGE
	SDM-HS95P	BLACK	UC	6,700,001-6,800,000	LPL	LGE
	SDM-HS95P	SILVER	AEP	6,150,001-6,300,000	FUJITSU	LGE
	SDM-HS95P	BLACK	AEP	6,600,001-6,700,000	FUJITSU	LGE
	SDM-HS95P	SILVER	CHINA	6,150,001-6,300,000	FUJITSU	LGE
	SDM-HS95P	BLACK	CHINA	6,600,001-6,700,000	FUJITSU	LGE

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SPECIFICATIONS

1. LCD CHARACTERISTICS

Type	: TFT Color LCD Module
Active Display Area	: 19 inch(376.32(H) x 301.056(V))
Size	: 404.2(W) x 330(H) x 20(D)
Pixel Pitch	: (0.098 x 3) x 0.294
Color Depth	: 16.2M Colors
Electrical Interface	: LVDS
Surface Treatment	: Glare

2. OPTICAL CHARACTERISTICS

2-1. Viewing Angle by Contrast Ratio 10

LPL TN

Right : +70°(Min.), +80°(TYP) Left : +70°(Min.), +80°(TYP)
Top :+75° min., +85°(Typ) Bottom : +65°min., +75°(Typ)

FUJITSU

Right : +85°(Min.) Left : +89°(TYP)
Top : +85°(Min.) Bottom : +89°(TYP)

2-2. Luminance : 450(Typ)

2-3. Contrast Ratio : 600(Typ)

3. SIGNAL (Refer to the Timing Chart)

3-1. Sync Signal

• Type : Separate Sync

3-2. Video Input Signal

1) Type : R, G, B Analog
2) Voltage Level : 0~0.70 V(± 5%)
3) Input Impedance : 75 Ω

3-3. Operating Frequency

Horizontal(Analog): 28 ~ 80kHz
Horizontal(Digital) : 28 ~ 64kHz
Vertical(Analog) : 48 ~ 75Hz
Vertical(Digital) : 60Hz

4. Max. Resolution

Analog : 1280 x 1024 / 75Hz
Digital : 1280 x 1024 / 60Hz

5. POWER SUPPLY

5-1. Power : AC 100~240V, 50/60Hz , 1.0A

5-2. Power Consumption

MODE	H/V SYNC	VIDEO	POWER CONSUMPTION	LED COLOR
POWER ON (NORMAL)	ON/ON	ACTIVE	less than 60 W	GREEN
STAND-BY	OFF/ON	OFF	less than 1 W	AMBER
SUSPEND	ON/OFF	OFF	less than 1 W	AMBER
DPMS OFF	OFF/OFF	OFF	less than 1 W	AMBER
POWER S/W OFF	-	-	less than 1 W	OFF

6. ENVIRONMENT

6-1. Operating Temperature: 5°C~35°C (41°F~95°F) (Ambient)
6-2. Relative Humidity : 10%~80% (Non-condensing)

7. DIMENSIONS (with TILT/SWIVEL)

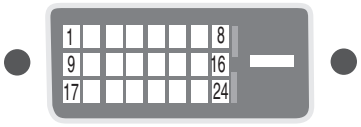
Width : 435 mm
Depth : 146 mm
Height : 418 mm

8. WEIGHT (with TILT/SWIVEL)

Net. Weight : 6.0 kg
Gross Weight : 8.41 kg

Signal Connector Pin Assignment

• DVI-D Connector (Digital)



Pin	Signal (DVI-D)	Pin	Signal (DVI-D)
1	T. M. D. S. Data2-	16	Hot Plug Detect
2	T. M. D. S. Data2+	17	T. M. D. S. Data0-
3	T. M. D. S. Data2/4 Shield	18	T. M. D. S. Data0+
4	T. M. D. S. Data4-	19	T. M. D. S. Data0/5 Shield
5	T. M. D. S. Data4+	20	T. M. D. S. Data5-
6	DDC Clock	21	T. M. D. S. Data5+
7	DDC Data	22	T. M. D. S. Clock Shield
8	Analog Vertical Sync.	23	T. M. D. S. Clock+
9	T. M. D. S. Data1-	24	T. M. D. S. Clock-
10	T. M. D. S. Data1+		
11	T. M. D. S. Data1/3 Shield		
12	T. M. D. S. Data3-		
13	T. M. D. S. Data3+		
14	+5V Power		
15	Ground (return for +5V, H. Sync. and V. Sync.)		

T. M. D. S. (Transition Minimized Differential Signaling)

PRECAUTION

WARNING FOR THE SAFETY-RELATED COMPONENT.

- There are some special components used in LCD monitor that are important for safety. ***These parts are marked ⚠ on the schematic diagram and the replacement parts list.*** It is essential that these critical parts should be replaced with the manufacturer's specified parts to prevent electric shock, fire or other hazard.
- Do not modify original design without obtaining written permission from manufacturer or you will void the original parts and labor guarantee.

TAKE CARE DURING HANDLING THE LCD MODULE WITH BACKLIGHT UNIT.

- Must mount the module using mounting holes arranged in four corners.
- Do not press on the panel, edge of the frame strongly or electric shock as this will result in damage to the screen.
- Do not scratch or press on the panel with any sharp objects, such as pencil or pen as this may result in damage to the panel.
- Protect the module from the ESD as it may damage the electronic circuit (C-MOS).
- Make certain that treatment person's body are grounded through wrist band.
- Do not leave the module in high temperature and in areas of high humidity for a long time.
- The module not be exposed to the direct sunlight.
- Avoid contact with water as it may a short circuit within the module.
- If the surface of panel become dirty, please wipe it off with a softmaterial. (Cleaning with a dirty or rough cloth may damage the panel.)

⚠ CAUTION

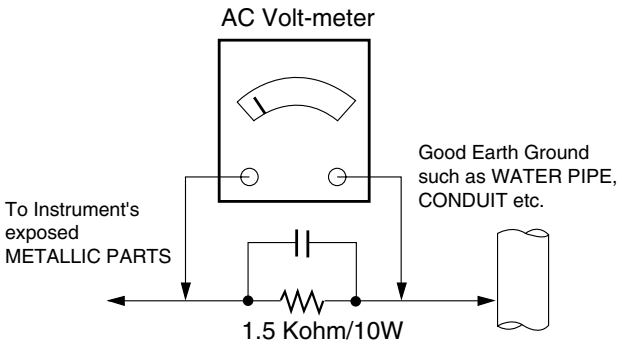
Please use only a plastic screwdriver to protect yourself from shock hazard during service operation.

⚠ WARNING

BE CAREFUL ELECTRIC SHOCK !

- If you want to replace with the new backlight (CCFL) or inverter circuit, must disconnect the AC adapter because high voltage appears at inverter circuit about 650Vrms.
- Handle with care wires or connectors of the inverter circuit. If the wires are pressed cause short and may burn or take fire.

Leakage Current Hot Check Circuit



SERVICING PRECAUTIONS

CAUTION: Before servicing receivers covered by this service manual and its supplements and addenda, read and follow the ***SAFETY PRECAUTIONS*** on page 3 of this publication.

NOTE: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember: Safety First.

General Servicing Precautions

1. Always unplug the receiver AC power cord from the AC power source before;
   a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
   b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
   c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.
      CAUTION: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
   d. Discharging the picture tube anode.
2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc) equipped with a suitable high voltage probe.
   Do not test high voltage by "drawing an arc".
3. Discharge the picture tube anode only by (a) first connecting one end of an insulated clip lead to the degaussing or kine aquadag grounding system shield at the point where the picture tube socket ground lead is connected, and then (b) touch the other end of the insulated clip lead to the picture tube anode button, using an insulating handle to avoid personal contact with high voltage.
4. Do not spray chemicals on or near this receiver or any of its assemblies.
5. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable non-abrasive applicator; 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength)
   CAUTION: This is a flammable mixture.
   Unless specified otherwise in this service manual, lubrication of contacts in not required.
6. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
7. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
8. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.
   Always remove the test receiver ground lead last.
9. *Use with this receiver only the test fixtures specified in this service manual.*
   CAUTION: Do not connect the test fixture ground strap to any heat sink in this receiver.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid-state) devices can be damaged easily by static electricity. Such components commonly are called *Electrostatically Sensitive (ES) Devices.* Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range or 500 ¡F to 600 ¡F.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a mall wire-bristle (0.5 inch, or 1.25cm) brush with a metal handle.
   Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique
   a. Allow the soldering iron tip to reach normal temperature.
      (500 ¡F to 600 ¡F)
   b. Heat the component lead until the solder melts.
   c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
      CAUTION: Work quickly to avoid overheating the circuitboard printed foil.
6. Use the following soldering technique.
   a. Allow the soldering iron tip to reach a normal temperature (500 ¡F to 600 ¡F)
   b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.
   c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.
      CAUTION: Work quickly to avoid overheating the circuit board printed foil.
   d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

IC Remove/Replacement

Some chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

Replacement

1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas).

"Small-Signal" Discrete Transistor Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact then solder each connection.

Power Output, Transistor Device Removal/Replacement

1. Heat and remove all solder from around the transistor leads.
2. Remove the heat sink mounting screw (if so equipped).
3. Carefully remove the transistor from the heat sink of the circuit board.
4. Insert new transistor in the circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heat sink.

Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicular y to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and if necessary, apply additional solder.

Fuse and Conventional Resistor Removal/Replacement

1. Clip each fuse or resistor lead at top of the circuit board hollow stake.
2. Securely crimp the leads of replacement component around notch at stake top.
3. Solder the connections.
   CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board to prevent excessive component temperatures.

Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board causing the foil to separate from or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

At IC Connections

To repair a defective copper pattern at IC connections use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections).

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary).
2. carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the out-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area and clip off any excess jumper wire.

At Other Connections

Use the following technique to repair the defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.

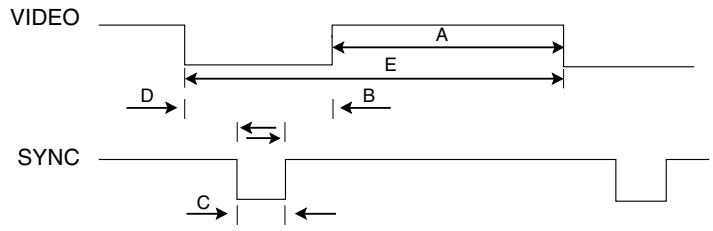
1. Remove the defective copper pattern with a sharp knife.
   Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side.
   Carefully crimp and solder the connections.
   CAUTION: Be sure the insulated jumper wire is dressed so the it does not touch components or sharp edges.

TIMING CHART

<< Dot Clock **(MHz),** Horizontal Frequency **(kHz)**, Vertical Frequency **(Hz)**, Horizontal etc... **(μs)**, Vertical etc... **(ms)** >>

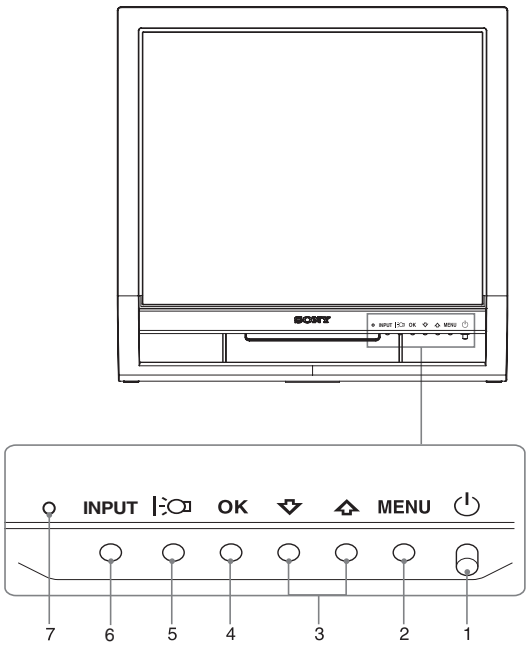
Mode	H/V Sort	Sync Polarity	Dot Clock	Frequency	Total Period (E)	Video Active Time (A)	Front Porch (C)	Sync Duration (D)	Back Porch (F)	Blanking time (B)	Resolution
1	H	–	28.350	31.500	900	720	18	108	54	180	**720x400**
	V	+		70.156Hz	449	400	12	3	34	49	**70Hz**
2	H	–	25.175	31.469	800	640	16	96	48	160	**640x480**
	V	–		59.940Hz	525	480	10	2	33	45	**60Hz**
3	H	–	30.240	35.00	864	640	64	64	96	224	**640x480**
	V	–		66.667Hz	525	480	3	3	39	45	**65Hz**
4	H	–	31.500	37.50	840	640	16	64	120	200	**640x480**
	V	–		75.0Hz	500	480	1	3	16	20	**75Hz**
5	H	–	31.505	35.162	896	720	34	40	102	176	**720x480**
	V	–		59.901Hz	587	480	12	2	93	107	**60Hz**
6	H	+-	36.000	35.156	1024	800	24	72	128	224	**800x600**
	V	+		56.250Hz	625	600	1	2	22	25	**56Hz**
7	H	+	40.000	37.879	1056	800	40	128	88	256	**800x600**
	V	+		60.317Hz	628	600	1	4	23	28	**60Hz**
8	H	+	50.000	48.077	1040	800	56	120	64	240	**800x600**
	V	+		72.188Hz	666	600	37	6	23	66	**72Hz**
9	H	+	49.500	46.875	1056	800	16	80	160	256	**800x600**
	V	+		75.0Hz	625	600	1	3	21	25	**75Hz**
10	H	–	57.285	49.727	1152	832	32	64	224	320	**832x624 (MAC16") 75Hz**
	V	–		74.553Hz	667	624	3	3	37	43	
11	H	–	65.000	48.363	1344	1024	24	136	160	320	**1024x768**
	V	–		60.004Hz	806	768	3	6	29	38	**60Hz**
12	H	–	75.000	56.476	1328	1024	24	136	144	304	**1024x768**
	V	–		70.069Hz	806	768	3	6	29	38	**70Hz**
13	H	+	78.750	60.023	1312	1024	16	96	176	288	**1024x768**
	V	+		75.029Hz	800	768	1	3	28	32	**75Hz**
14	H	–	80.000	60.241	1328	1024	32	96	176	304	**1024x768 (MAC19) 75Hz**
	V	–		74.927Hz	804	768	3	3	30	36	
15	H	+	108.000	67.500	1600	1152	64	128	256	448	**1152x864**
	V	+		75.000Hz	900	864	1	3	32	36	**75Hz**
16	H	–	100.000	68.681	1456	1152	32	128	144	304	**1152x870 (MAC21) 75Hz**
	V	–		75.062Hz	915	870	3	3	39	45	
17	H	–	92.940	61.795	1504	1152	30	128	194	352	**1152x900**
	V	–		65.950Hz	937	900	2	4	31	37	**66Hz**
18	H	–	105.590	71.732	1472	1152	16	96	208	320	**1152x900**
	V	–		76.068Hz	943	900	2	8	33	43	**75Hz**
19	H	+	46.200	31.216	1480	1170	37	129	144	310	**1170x584**
	V	+		50.026Hz	624	584	3	3	34	40	**50Hz**
20	H	+	108.000	60.000	1800	1280	96	112	312	520	**1280x960**
	V	+		60.000Hz	1000	960	1	3	36	40	**60Hz**
21	H	+	108.000	63.981	1688	1280	48	112	248	408	**1280x1024**
	V	+		60.020Hz	1066	1024	1	3	38	42	**60Hz**
22	H	+	135.000	79.976	1688	1280	16	144	248	408	**1280x1024**
	V	+		75.025Hz	1066	1024	1	3	38	42	**75Hz**

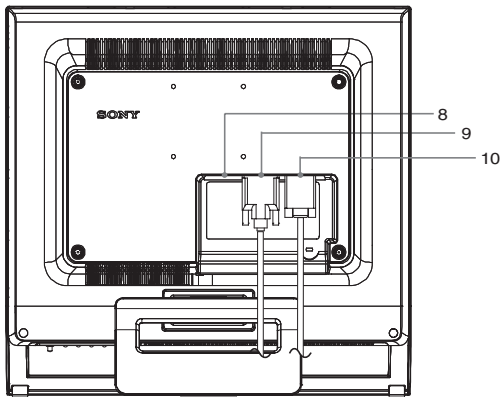
TIMING CHART



OPERATING INSTRUCTIONS

FRONT / REAR VIEW





1. ⏻ (Power) switch and indicator
To turn the display on or off, press the ⏻ (power) switch upward.
The power indicator lights up in green when the display is turned on, and lights up in orange when the monitor is in power saving mode.

2. MENU button
This button displays or closes the main menu.

3. ↑/↓ buttons
These buttons function as the ↑/↓ buttons when selecting the menu items and making adjustments.

4. OK button
This button selects the item or executes the settings in the menu.

5. ☼ button
This button is used to change the brightness of the screen.

6. INPUT button
This button switches the video input signal between INPUT1 and INPUT2 when computers are connected to the moniter.

7. Light sensor
This sensor measures the brightness of the surrounding area. Be sure not to cover the sensor with papers, etc.

8. AC IN connector
Connect the power cord(supplied).

9. DVI-D input connector (digital RGB)
This connector inputs digital RGB video signals that comply with DVI Rev.1.0.

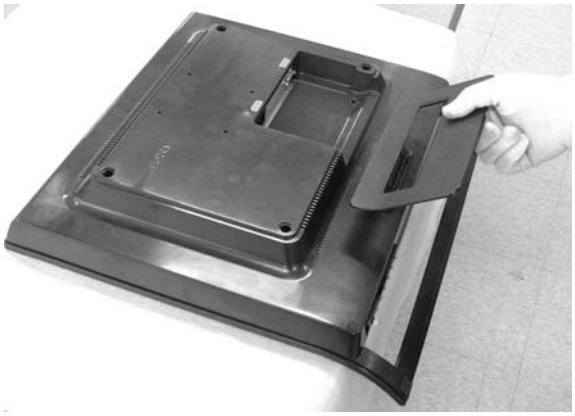
10. HD15 (RGB) input connector (analog RGB)
This connector inputs analog RGB video signals (0.7 Vp-p, positive) and SYNC signals. DDC (Display Data Channel) is a standard of VESA.

DISASSEMBLY

 # 1

1) Please remove Screws which are between Hinge and Stand support like picture.

 # 2

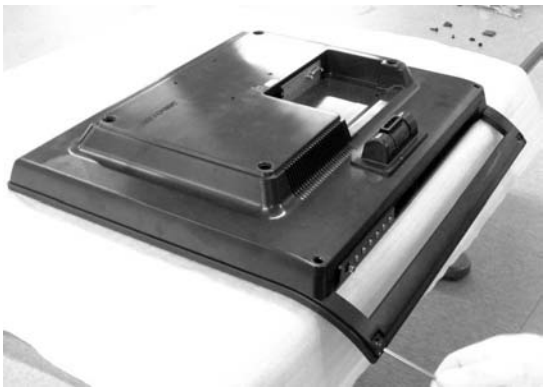


2) Please pull the Stand support at the Hinge, then Stand support will be departed.

 # 3

3) Please remove the screw cover at the Back cabinet, then screw cover will be departed.

 # 4



4) Please lift the left-bottom side edge of Back cabinet with tip-jig like picture, then latch will be departed.

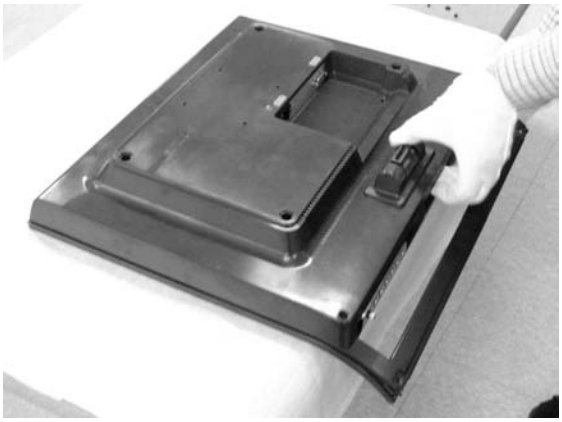
 # 5

5) Please lift the bottom side of Back cabinet with fingertip like picture, then latch will be departed.

 # 6

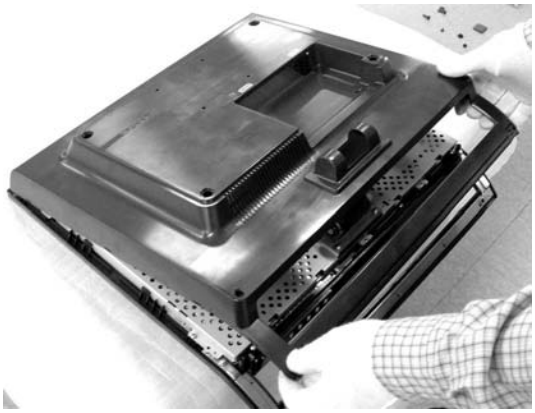
6) Please pull the left side of Back cabinet like picture then latch will be departed.

 # 7



7) If Back cabinet will be departed easily, please pull bottom side of Back cabinet faced hinge outside.

 # 8



8) If Back cabinet will be departed easily, please pull upside edge of Back cabinet outside.

SERVICE OSD

To enter service OSD menu,

1) Turn off the power switch button.

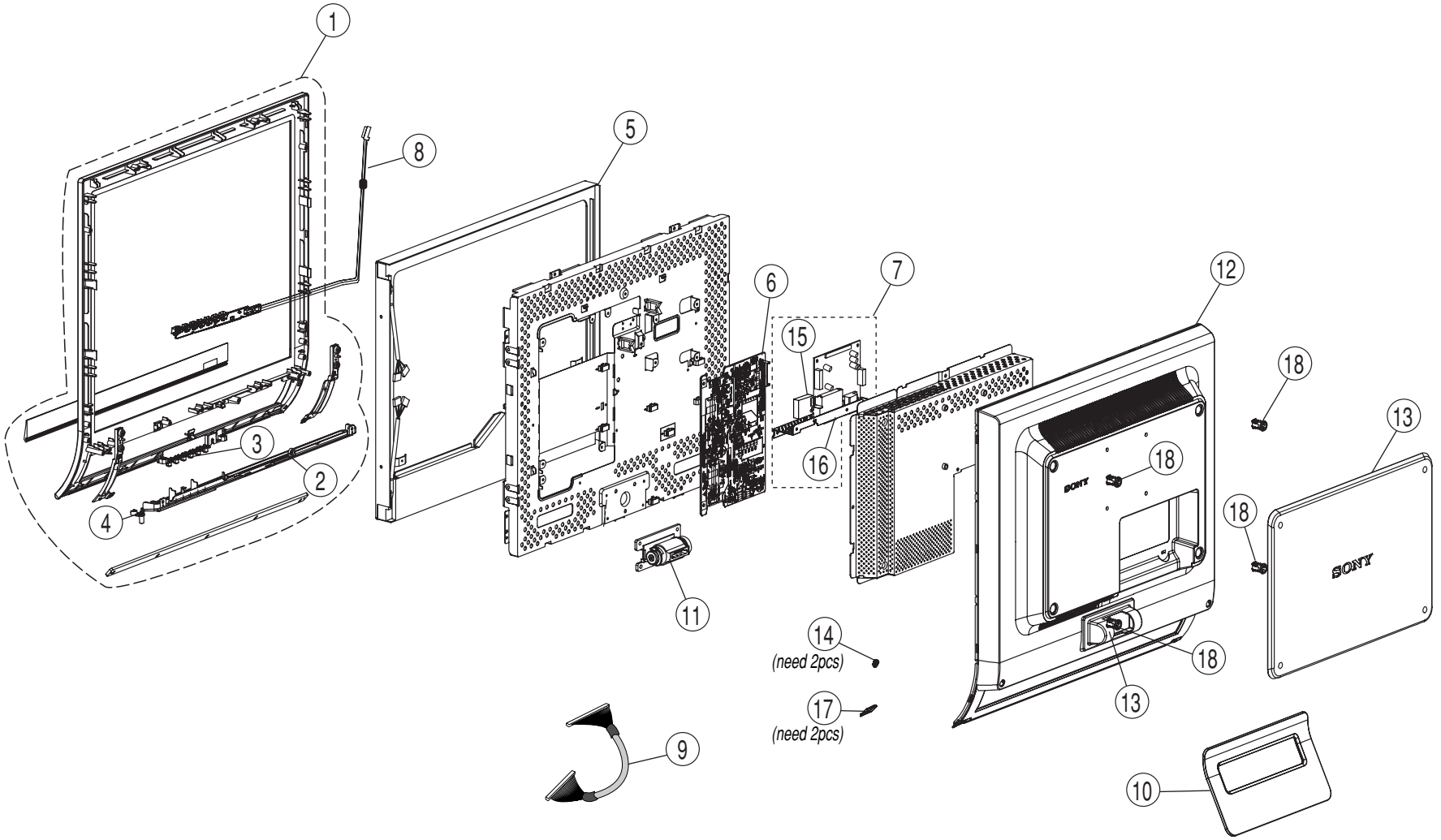
2) Press Ågvolume downÅh button and Ågpower buttonÅh at the same time.

3) Shows the service OSD menu. That menu is shown at the down side of main menu.

4) The service OSD menu contains additional menus as followings.

   1. COLOR TEMP: Adjust R/G/B color values of contrast and brightness in 9300K, 6500K and sRGB.
   2. INITIAL EEPROM: Initialize the EDID DATA at DDC2B EEPROM is saved system memory.
   3. CLEAR ETI: Initialize the used time of MFT.
   4. AGING: Select aging mode. (on/off)
   5. WHITE BALANCE: White balance adjustment
   6. DEFAULT TIMING: Select default resolution timing.
   7. MODULE: Select the module type.

EXPLODED VIEW



EXPLODED VIEW PARTS LIST

Ref. No.	Part No.	Description
1	X-2050-648-1	BEZEL ASSY (Silver)
	X-2050-830-1	BEZEL ASSY (Black)
2	2-588-346-11	BUTTON BRAKET
3	2-588-343-11	MULTI BUTTON
4	2-588-344-01	POWER BUTTON
5	1-805-818-11	LCD PANEL (LPL)
	1-805-811-11	LCD PANEL FLC48SXC8V-12A (Fujitsu)
6	1-789-179-11	MOUNTED PWB, G (LPL)
	1-789-178-11	MOUNTED PWB, G (Fujitsu)
7	1-789-180-11	MOUNTED PWB, A (LPL)
	1-789-188-11	MOUNTED PWB, A (Fujitsu)
8	1-789-187-11	MOUNTED PWB, H (COMMON)
9	1-900-275-71	CONNECTOR ASSY
10	X-2050-652-1	STAND ASSY
11	X-2050-654-1	HINGE ASSY
12	X-2050-650-1	BACK CABINET ASSY
13	2-588-893-01	REAR COVER (Silver)
	2-588-893-11	REAR COVER (Black)
14	2-591-627-01	SCREW COVER
15	1-819-276-11	AC INLET
16	2-588-347-01	METAL BRAKET
17	2-591-628-01	FRONT FOOT RUBBER
18	2-593-157-01	RUBBER BUSHIMG
ACCESSORIES & PACKING MATERIALS		
19	1-827-118-11	POWER-SUPPLY CORD SET (U/C), Black
	1-827-120-11	POWER-SUPPLY CORD SET (AEP), Black
	1-827-122-11	POWER-SUPPLY CORD SET (CH), Black
20	1-827-757-11	D-SUB CABLE
21	1-827-758-11	DVI CABLE
22	4-102-356-21	CD-ROM
23	2-583-748-01	QUICK SETUP GUIDE (U/C)
	2-583-748-11	QUICK SETUP GUIDE (AEP, CH)